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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,363	09/02/2004	Masanori Yoshikawa	10873.1517USWO	1043
23552	7590	10/03/2005	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			KHATRI, PRANAV V	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/506,363

Applicant(s)

YOSHIKAWA ET AL.

Examiner

Pranav V. Khatri

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-11 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2 September, 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>09/02/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshikawa et al. (US Patent No. 5,751,464).

Regarding claim 1, Yoshikawa et al. discloses an optical scanner, comprising; first (see fig 1 numeral 7) and second (8) reflecting optical elements, wherein the second reflecting optical element is disposed as to reflect incident light to be incident on the first reflecting optical element and reflected light from the first reflecting optical element (as seen in Fig 1)

Regarding claim 2, Yoshikawa et al. discloses a light source part (see Fig 1 numeral 1); an optical deflector (5) that scans a light beam from the light source part (1); and a first image forming optical system (numerals 2-4) that is disposed between the light source part (1) and the optical deflector (5) and allows a linear image to be formed on a deflection surface of the optical deflector (Col 17 lines 35-38), wherein the first reflecting optical element (7) is formed of a curved surface mirror, and is disposed between the optical deflector (5) and a surface (9) to be scanned and constitutes a second image forming optical system (7 and 8), and the first image forming optical system (numerals 2-4), the optical deflector (5), and the second image forming optical

system (7 and 8) are disposed respectively in different positions in a sub-scanning direction so that a light beam from the first image forming optical system (numerals 2-4) is incident obliquely (beam is slanted by mirror 4) relative to a plane that includes a normal line to the defection surface of the optical deflector (5) and is parallel to a main scanning direction (Col 5 Lines 28-34), and so that a light beam from the optical deflector is incident obliquely relative to a plane that includes a normal line at a vertex of the curved surface mirror and is parallel to the main scanning direction (hereinafter, referred to as a "YZ plane")(Col 5 Lines 34-37).

Regarding claim 3, Yoshikawa et al. discloses wherein the first reflecting optical element (7) is formed of a curved surface mirror, and the curved mirror surface has a shape symmetrical with respect to a plane that includes a normal line at a vertex of the curved surface mirror and is perpendicular to a main scanning direction (hereinafter, referred to as "XZ plane")(as seen in Fig 1 and Col 1 Line 63 – Col 2 Line 1).

Regarding claim 4, Yoshikawa et al. discloses wherein the second reflecting optical element (8) reflects the incident on the first reflecting optical element and the reflected light from the first reflecting optical element by using a common surface of the second reflecting optical element (the toric surface of 8, with a convex shape).

Regarding claim 7, Yoshikawa et al. discloses wherein the first reflecting optical element (7) is disposed in a space interposed between incident light to be incident on the second reflecting optical element (8) and reflected light from the second reflecting optical element (as seen in Fig 1).

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Regarding claim 9, Yoshikawa et al. discloses wherein the first reflecting optical element has a shape that permits compensation for a curve of a scanning line that occurs due to oblique light incidence (Col 9 Lines 47-50).

Regarding claim 10, Yoshikawa et al. discloses wherein the curved surface mirror has a skew shape in which a normal line at each of points other than the vertex on a generatrix that is a curved line where a surface of the curved surface mirror intersects with the YZ plane is not included in the YZ plane (Col 1 Lines 48-52, and both mirrors have a skew shape as seen in Fig 1).

Regarding claim 11, Yoshikawa et al. discloses wherein an image forming apparatus comprising an optical scanner as claimed in claim 1 (Fig 15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa et al. (US Patent No. 5,751,464) in view of Nakaie (US Patent No. 6,049,409).

Yoshikawa et al. discloses the claimed invention as set forth above. Yoshikawa et al. lacks the teaching of a third reflecting optical element that reflects reflected light from the second reflecting, wherein the first reflecting optical element is disposed in a space interposed among incident light to be incident on the second reflecting optical element, the reflected light from the second reflecting optical element, and reflected light from the third reflecting optical element.

However, Nakaie discloses of a third reflecting optical element (see Nakaie Fig 1 Numeral 40) that reflects reflected light from the second reflecting (38), wherein the first reflecting optical element (26) is disposed in a space interposed among incident light to be incident on the second reflecting optical element (38), the reflected light from the second reflecting optical element (38), and reflected light from the third reflecting optical element (40) (as seen in Fig 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the scanner of Yoshikawa et al. with a scanning device that has three reflecting mirrors of Nakaie for the purpose of further reflecting light from the second reflecting optical element so it reaches the scanning surface.

Allowable Subject Matter

Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: claims are allowable at least for the reason that the prior art does not teach or reasonably suggest the following conditional expressions (1), (2), and (3):

$$dm/2 + 1 \leq 21 \tan \theta M \leq di/2 + do/2 + 2 \quad (1);$$

$$di = dm \times (L - L_{mi}) / L \quad (2);$$

$$do = dm \times (D - L_{mo}) / D \quad (3).$$

Yoshikawa et al. and Nakaie discloses all as set forth in the claimed combination except the above conditional expressions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pranav V. Khatri whose telephone number is 571-272-8311. The examiner can normally be reached on M-F, 8:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pranav Khatri
Examiner
Art Unit 2872



EUN-CHA P. CHERRY
PRIMARY EXAMINER